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A NEW SPECIES OF NEMERTEAN (*Cerebratulus melanops*) FROM THE GULF OF
ST. LAWRENCE.

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Among a small number of Nemerteans collected by Dr. J. Schmitt at Anticosti was a single perfect individual of a species of *Cerebratulus* which is apparently undescribed. This specimen is of about the size and proportions of medium-sized individuals of *C. marginatus* which probably occurs in the same region, but from which the present species can easily be distinguished by the color and by the possession of several distinct ocelli on each side of the snout. *C. grænlandicus* Punnett has recently been described from Greenland¹ and may also occur in the same region as the present species, but the absence of ocelli in the former is a sufficient specific distinction. In only a few other species of the genus are ocelli present in the adult worms, although it is possible that they are generally present in very young individuals. Besides the possession of ocelli the species is remarkable because of the presence of a large number of efferent nephridial ducts, although a number of other species, including *C. grænlandicus*, possess this same peculiarity.

The single specimen on which this diagnosis is based had been preserved in formalin, and may be described as follows: Body elongated, rather slender and ribbon-like, of the general size and proportions of *C. marginatus*. After preservation, rounded in esophageal region, moderately flattened posteriorly, tapering gradually to posterior extremity. Head of moderate proportions as in *C. marginatus*; mouth of large size, elongated, situated as far back as posterior ends of cephalic furrows; proboscis pore small, subterminal; cephalic furrows rather short, separated anteriorly from each other and from proboscis pore.

¹ *Proc. Zool. Soc. London*, p. 99, 1901.

The single preserved specimen measured about 25 cm. in length and 4 to 5 mm. in width.

There are several *ocelli* of moderate size situated in a single row on each lateral margin of the snout. In the single specimen at hand there are three conspicuous ocelli on each side near the tip of the snout (Fig. 1).

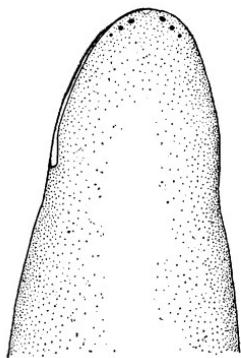


FIG. 1. Dorsal view of head, showing position of ocelli and cephalic furrows.

The color of the body is olive green on the dorsal surface, with a darker oval area situated on the dorsal side a little behind the tip of the snout; the ventral surface and lateral margins of the body are much paler or colorless.

In internal anatomy the following peculiarities of structure may be noted:

The *epithelium* is composed of the usual slender, ciliated columnar and glandular cells — the latter containing a secretion which stains deeply and is often found extruded in oval masses among the cilia. The two delicate layers of integumental muscles are arranged as in related species. The *cephalic glands* are limited to the anterior portion of the snout. The *cutis glands* form a compact but comparatively thin layer immediately beneath the underlying fibrous layer, as in many related species, and are therefore distinctly separated from the internal longitudinal muscles by the fibrous layer of the *cutis*. The average thickness of the layer of *cutis glands* is only about one third to one fifth as great as that of the outer longitudinal muscular layer. As in other species, some of the glands show a peculiar affinity for nuclear stains while others take on the plasma stains only, as has been described by Miss Thompson¹ for *Zygeupolia*.

The *proboscis sheath* becomes very small towards the posterior end of the body (Fig. 3) and terminates some little distance anterior to the anus. The *proboscis* is attached anteriorly to the tissues of the head immediately in front of the brain, but whether the posterior end was attached to the wall of the sheath was not determined. From the conditions found in *Cerebratulus lacteus*,

¹ Proc. Acad. Nat. Sci. Philadelphia, p. 664, 1901.

Zygeupolia litoralis, and certain other Heteronemerteans, it is not unlikely that the retractor muscle is absent. Only two layers of muscles are present in the proboscis, a longitudinal layer on the outside and a circular layer within—the inner longitudinal layer found in many species of the genus being entirely wanting. Inside the muscles occur the usual nervous plexus and the connective tissue layer situated beneath the inner glandular epithelium.

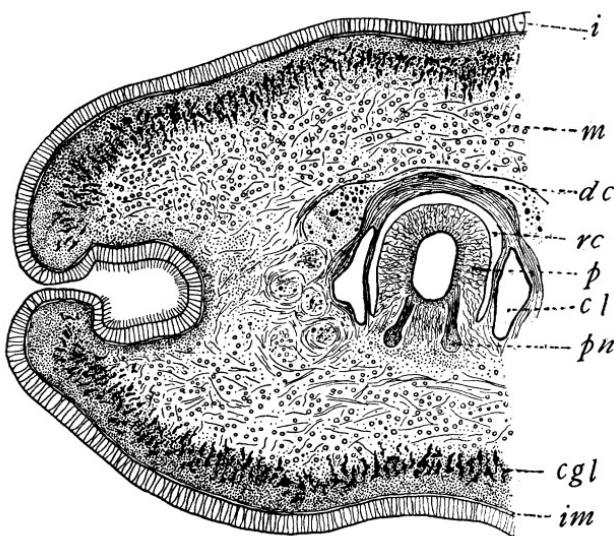


FIG. 2. Portion of transverse section through head in region of dorsal brain commissure (*dc*) and attachment of proboscis (*p*) to tissues of head. The two highly developed proboscis nerves (*pn*) are just on the point of entering proboscis. The disposition of the cutis glands (*cgl*) and their absence beneath the cephalic furrow, the relations of the cephalic blood lacunæ (*cl*) and the cephalic musculature are shown; *i*, integument; *im*, integumental muscles; *rc*, rhynchodaeum; *m*, cephalic muscles.

Dorsal and ventral muscular crosses are well developed in this species.

All three of the *muscular layers* of the body walls are well developed. In the posterior portion of the body alone is the internal longitudinal muscular layer very much reduced.

In regard to the alimentary canal it should be remarked that the *esophagus* may be differentiated histologically into an anterior and a posterior chamber, as has been described so fully by Miss Thompson¹ for *Zygeupolia*. The anterior chamber, or esophagus

¹ *L. C.*, p. 706.

proper, is distinguished by a great abundance of ciliated cells with very numerous short cilia and with their nuclei placed near the superficial border of the cells; while the posterior chamber, or *stomach*, is characterized by fewer ciliated cells, and these have less numerous but longer cilia, the nuclei are pressed nearer the basal portion of the cells, and the gland cells contain a much more granular secretion and vacuolated cytoplasm than those in the anterior chamber. The *rectum* is longer than in many related

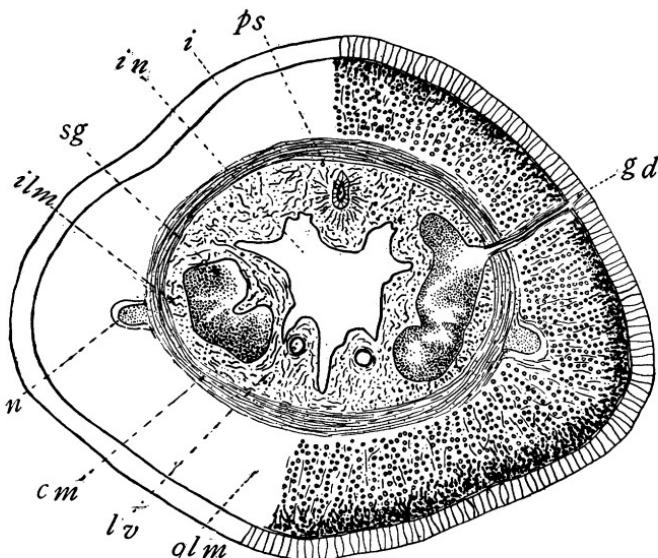


FIG. 3. Transverse section through posterior end of body, showing the very minute proboscis sheath (*ps*), the lateral vessels (*lv*), the sexual glands (*sg*), and the genital duct (*gd*). The internal muscular layer (*ilm*) is here very much reduced while the outer longitudinal muscles (*olm*) remain comparatively massive; *n*, lateral nerve; *in*, intestine; *cm*, circular muscles.

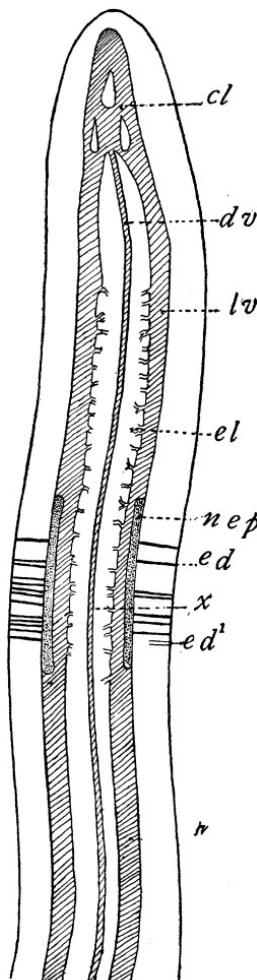
species, and the *anus* opens on the dorsal surface at the posterior end of the body.

The *blood vascular system* presents the usual arrangement of cephalic and esophageal lacunæ. There is a single broad cephalic lacuna (Fig. 4) situated above and beside the rhynchodæum, and extending from near the tip of the snout almost to the brain region where it is divided into two lateral lacunæ by the enlargement of the rhynchodæum (Fig. 4). These two lacunæ unite

ventrally in the brain region to be again separated after a short space. At the posterior end of the brain region they are again united by a broad median lacuna which gives rise to the proboscis sheath vessel posteriorly (Fig. 4). Behind the mouth the lateral lacunæ send off a great many anastomosing blood spaces beside and beneath the esophagus. On the walls of these blood spaces delicate branches of the *nephridial tubules* ramify in all directions. From the pair of nephridial canals which lie on the lateral walls of the lateral blood spaces numerous efferent ducts pass through the muscular layers to the dorso-lateral aspects of the body as usual. These ducts are probably variable in number for in the single specimen sectioned there were thirteen on one side and only seven on the other. In addition to the seven ducts of this side were two incomplete or rudimentary ducts (Fig. 4, *ed*) which did not connect with the

FIG. 4. Diagram of blood vascular system and nephridia. The two cephalic lacunæ (*cl*) unite anteriorly by a rather broad anastomosis. In the brain region are two other anastomoses of the cephalic lacunæ, from the posterior of which the dorsal vessel (*dv*) and the lateral vessels (*lv*) originate. The lateral vessels give rise to profusely branched anastomosing lacunæ (*el*) beside and beneath the esophagus. Dorsal vessel leaves the wall of proboscis sheath in the midst of nephridial region (*x*). The nephridia (*nep*) lie on the lateral walls of lateral vessels about halfway between mouth and intestinal region, and send numerous branches among the esophageal lacunæ. They open to exterior through numerous efferent ducts (*ed*) on each side. In this specimen there were thirteen on one side and seven on the other. There are, however, two rudimentary ducts (*ed'*) on the side with the smaller number.

nephridial canals at all and are apparently the remains of formerly functional ducts which, for some reason or other, have become degenerated and no longer functional. Similar rudimentary efferent ducts have been noticed in several other forms.



The *brain* and the *esophageal, dorso-median and lateral nerves* are as in related species. The *proboscis nerves* of which there is a single pair arising from the ventral ganglia, near the origin of the ventral commissure, are remarkably large and conspicuous. As seen in Fig. 2, they enter directly into the ventral wall of the proboscis at its attachment to the tissues of the head (immediately in the region of the dorsal brain commissure) and then pass into the midst of the longitudinal muscles of the proboscis where they divide into a number of smaller nerves. A short distance behind the brain these spread out into a plexus beneath the epithelium, as in other species in which the inner muscular layer of the proboscis is wanting. The three slight pits on the tip of the snout, representing the *frontal sense organs*, are comparatively well developed. *Cerebral sense organs* are also highly developed, and exhibit the usual structure and relations with the dorsal ganglia and the cephalic furrows.

The *sexual glands*, which alternate with the diverticula of the intestine, become mature in midsummer. The *genital ducts*, when fully formed, open through the muscular layers to the dorso-lateral aspects of the body as in related species.